I. INTERVIEW SUMMARY

Applicants acknowledge receiving the Examiner's Interview Summary mailed December 5, 2001, summarizing the brief telephone conversation between the Examiner and Applicants' representative on November 15, 2001. While Applicants acknowledge that a telephone conversation did take place on November 15, 2001, Applicants do not agree with the Examiner's assessment of the substance of the telephone conversation.

Applicants contacted the Examiner with regard to the Office Action mailed October 10, 2001, to discuss the Office Action and better understand how the Examiner was applying the Discenzo (U.S. Patent No. 6,195,057) reference against the presently claimed invention. Applicants desired to better understand how the Examiner was interpreting and applying the Discenzo reference, because Applicants had previously set forth reasons why the Discenzo reference did not anticipate the present claimed invention. In an earnest effort to advance prosecution of the present application, Applicants believed that a telephone conversation would help communicate the Examiner's and the Applicants' positions with respect to the cited reference, and ultimately enable the pursuit of a more efficient path for continuing prosecution.

On November 15, 2001, Applicants did not and now do not agree that the pending claims are met by the art applied by the Examiner. On November 15, 2001, during the telephone conversation, Applicants acknowledged that one approach for advancing prosecution of the present application could be the filing of a Request for Continued Examination including proper submissions as set forth by MPEP 706.07(h) and 37 CFR 1.114. As such, a Request for Continued Examination accompanies this response.

II. BRIEF OVERVIEW OF THE CLAIMED INVENTION

The present invention provides a **distributed sensing system in a networked environment for identifying an analyte**, the system comprising: a first

sensor array connected to the network comprising sensors capable of producing a first response in the presence of a chemical stimulus; a second sensor array connected to the network comprising sensors capable of producing a second response in the presence of a physical stimulus; and means for **identifying the analyte**. The present invention provides a **distributed sensing system**, because the sensor arrays can be separated and distributed over large spatial areas. Examples of the use of the distributed sensing system over large spatial areas include monitoring emission levels from industrial plants such as chemical and textile plants; progression of a plume of an escaped gas; and perimeter monitoring on industrial sites *(see also page 8, line 33 to page 9, line 32 of the specification)*.

The present invention provides the sensor arrays in a **networked environment** because, the data (i.e. responses) from the various spatially distributed sensor arrays are brought to a computer for processing to ultimately **identify** an unknown analyte. For example, as recited in the specification, suitable networks include a wireless or wired computer local area network, an intranet or the Internet. For example, see page 12, lines 15-18 of the specification, where Applicants clearly set forth that "the sensors can be separated over larger spatial areas, wherein the sensor arrays are connected via a network, such as a computer local area network, or the Internet." Further, the methods and systems of the present invention are used to **identify an unknown analyte** based on the responses (first response and a second response) provided by the first and second sensor arrays.

Identifying an unknown analyte as used in the present application means that the identity of an unknown substance is determined. This is more than merely measuring the physical parameters of a known substance. This determination of the identity of an unknown substance, establishes the substance's identity, or names it. In the present invention, this identification includes a comparison of the responses from the first and second sensor arrays with stored or known responses, where as a result of the comparison the analyte is identified. Various techniques for carrying out the

identification include, for example, principal component analysis, Fisher linear analysis, neural networks, pattern recognition as well as other as are set forth beginning on page 21 of the present application.

III. REJECTION UNDER 35 U.S.C. §102(e)

Claims 1, 4, 6, 7, 10, 11, 19, and 22 have been rejected under 35 U.S.C. §102(e) as allegedly being anticipated by U.S. Patent No. 6,196,057 B1 ("Discenzo"). To the extent the rejection is applicable to the amended set of claims, Applicants respectfully traverse the rejection.

Applicants have amended independent claims 1 and 19 to better articulate and thus provide a suitable level of protection for the presently claimed invention. Applicants respectfully submit that amended independent claims 1 and 19 are not anticipated and are distinguishable over the cited reference (Discenzo) for reasons set forth below. Furthermore, considering that dependent claims 2-11 (which include claims 4, 6, 7, 10, and 11) comprise all the features of independent claim 1, from which they depend, these claims are patentable to the same extent that independent claim 1 is patentable. Further, considering dependent claims 20-22 include all the features of independent claim 19, from which they depend, these claims are patentable to the same extent that independent claim 19 is patentable.

A. The Cited Reference

The Examiner states that with respect to claims 1 and 19 the Discenzo reference (U.S. Patent No. 6,196,057) teaches all the elements of independent claims 1 and 19, namely that "Discenzo discloses a distributed sensing system in a networked environment for identifying an analyte,..."

However, the Discenzo reference teaches an **integrated** multi-element lubricant sensor and a system for determining the health state of a known lubricant. The sensor system of Discenzo includes sensors for **collecting data relating to a particular parameter** such as pH, temperature, electrical conductivity, etc. to **assess the health**

state of a known lubricating fluid, and to determine when it's necessary to change the lubricating fluid in a rotating machinery such as an electric pump. For example, the Examiner's attention is respectfully directed to col. 2, lines 15-18, of the Discenzo reference wherein the health assessment and lifetime predication of a lubricant is set forth.

The Discenzo reference teaches a **micro** multi-element lubrication sensor for *in situ* monitoring of a plurality of lubricant parameters (see, col. 3 lines 15-17). Also see col. 7, lines 25-33, wherein the Discenzo reference provides that: **the lubricant sensor is small; the lubricant sensor is desirable for use in applications where space is at a premium**.

Furthermore, since the integrated micro multi-element sensor of Discenzo is immersed in a lubricant bath, and since the sensing elements are in close proximity to one another while immersed in the lubricant bath, and since this arrangement may cause data fragmentation and data overlap, the Discenzo reference also teaches a data fusion processor to address any potential data fragmentation or overlap issues (see, col. 3 lines 60-63).

B. Cited Reference Distinguished

The Discenzo reference does not teach or suggest all the prominent features of claim 1 and claim 19. These prominent features of claim 1 include a **distributed sensing system**; a **networked environment**; and importantly, **identifying an analyte.** The Discenzo reference is directed to the assessment of a lubricant's health state via the sensing of more than a single parameter. The Discenzo reference is not directed to a sensing system for identifying an unknown analyte. As recited above, the sensor system of Discenzo includes sensors for **collecting data relating to a particular parameter** such as pH, temperature, electrical conductivity, etc. to **assess the health state of a known lubricating fluid**, and to determine when it's necessary to change the lubricating fluid in a rotating machinery such as an electric pump. The Discenzo

reference is not directed to identifying an unknown analyte as is presently claimed. Discenzo is concerned only with one substance; lubrication oil.

On the other hand, the present invention is directed towards identifying an unknown analyte, and not the mere collection of data related to a particular lubricant parameter as is taught by the Discenzo reference. Applicants have amended independent claim 1 to better articulate this feature which is directed to the identification of an unknown analyte. Specifically, these features are clearly set out in claim 1, which is set forth below:

> *1. A distributed sensing system in a networked environment for identifying an analyte, said system comprising:*
>
> *a first sensor array connected to said network comprising sensors capable of producing a first response in the presence of a chemical stimulus;*
>
> *a second sensor array connected to said network comprising sensors capable of producing a second response in the presence of a physical stimulus;*
>
> *a computer connected to said network;*
>
> ***a computer readable algorithm for execution by said computer for identifying said analyte, said computer readable algorithm comprising***
>
> ***instructions for comparing said first response and said second response with a known response, and***
>
> ***instructions for identifying said unknown analyte.***

Accordingly, Applicants respectfully submit that amended independent claim 1 is distinguishable over the Discenzo reference.

Turning now to independent claim 19, Applicants have amended independent claim 19 to better articulate the features that are directed to the identification

of an unknown analyte. Specifically, these features are clearly set out in amended claim 19, which is set forth below:

> *19. A method for transferring a combination of chemical and physical data over a computer network for identification of an analyte, said method comprising:*
>
> *transmitting sensory data from a first sensor array comprising sensors capable of producing a first response in the presence of a chemical stimulus to a remote location;*
>
> *transmitting physical data from a second sensor array comprising sensors capable of producing a second response in the presence of a physical stimulus to a remote location; and*
>
> *processing said sensory and physical data at said remote location for identification of an analyte,* ***wherein said processing comprises***
>
> ***comparing said first response and said second response with a known response, and***
>
> ***identifying said unknown analyte.***

Claim 19 embodies a method for transferring data over a **computer network** to a **remote location** for **identification of an analyte**. Claim 19 is directed towards a method for identification of an unknown analyte. In stark contrast, the Discenzo reference is directed to an **integrated** and **small sensor** for immersion in a lubricant bath where space is a premium. The Discenzo sensor system is used for **collecting data relating to a particular parameter** such as pH, temperature, electrical conductivity, etc. to **assess the health state of a known lubricating fluid**, and to determine when it's necessary to change the lubricating fluid in a rotating machinery

such as an electric pump. Moreover, the Discenzo reference is not directed to identifying an unknown analyte.

The present invention, on the other hand, is directed towards identifying an unknown analyte, and not the mere collection of data related to a particular lubricant parameter as is taught by the Discenzo reference. Applicants have amended independent claim 19 to better articulate these limitations which are directed to the identification of an unknown analyte.

Accordingly, Applicants respectfully submit that for reasons stated above, amended claims 1 and 19 are patentable over the Discenzo reference. Further, considering that claims 2-11 include all the features of independent claim 1, from which they depend, these claims are patentable to the same extent that independent claim 1 is patentable. Further, considering claims 20-22 include all the features of independent claim 19, from which they depend, these claims are patentable to the same extent that independent claim 19 is patentable. As such, Applicants respectfully request that the Examiner withdraw this rejection.

IV. REJECTION UNDER 35 U.S.C. §103

A. The Examiner has rejected dependent claims 2 and 20 under 35 U.S.C. 103(a) as allegedly being obvious over Discenzo in view of U.S. Patent No. 5,469,369 to Rose-Pehrsson et al.

B. The Examiner has rejected dependent claims 3, 5, 8, and 21 under 35 U.S.C. 103(a) as allegedly being obvious over Discenzo in view of U.S. Patent No. 6,170,318 B1 to Lewis.

C. The Examiner has rejected dependent claim 9 under 35 U.S.C. 103(a) as allegedly being obvious over Discenzo in view of Lewis and further in view of U.S. Patent No. 5,728,581 to Schwartz et al.

Applicants have amended independent claims 1 and 19. For reasons stated above, Applicants respectfully submit that independent claims 1 and 19 are not anticipated and are distinguishable over the cited reference (Discenzo). Furthermore, Applicants respectfully submit that the additional references cited by the Examiner in combination with the Discenzo reference do not teach all the features of amended independent claims 1 and/or 19, which include the features directed to the identification of the unknown analyte. Moreover, the secondary references of Rose-Pehrsson et al., Lewis or Schwartz et al. do not supply the deficiencies of the primary references.

With regard to claims 2 and 20, when applying Rose-Pehrsson et al., the Examiner alleges that Rose-Pehrsson et al. teach the distributed sensing system in an networked environment in which the algorithm selects the most relevant modality in the first and second sensor array. The Rose-Pehrsson et al. references teaches a sensing system that provides a closed environment for the sensors and where the system delivers samples to the sensors using the sampling system (using pumps, tubes, filters, and preconcentrator tubes). All the sensors in the Rose-Pehrsson reference are chemical sensors of a same type. There is not a distinction between the sensor array types, where one array generates a response in the presence of a chemical stimulus and another array generates a response in the presence of a physical stimulus.

Furthermore, the Rose-Pehrsson reference does not teach an algorithm that selects the most relevant modality. The specific sections relied on by the Examiner and Rose-Pehrsson in general, teach sensors of the same type that have different selectivities, by using different thin films on their surfaces. These selectivities enable the same-type chemical sensors of Rose-Pehrsson to detect the presence of nerve agents over different levels of background vapors such as water vapor. Not only does Rose-Pehrsson not teach an algorithm for selecting the most relevant sensor modality as is recited in claims 2 and 20, the Rose-Pehrsson reference does not teach the other prominent features of independent claims 1 and 19 , including the feature directed towards identifying an

unknown analyte. As such, Applicants respectfully request that the Examiner withdraws the 35 USC 103(a) rejection of claims 2 and 20.

With regard to claims 3, 5, 8 and 21, the Examiner alleges that a combination of Lewis and Discenzo teach all the features of claims 3, 5, 8 and 21. Applicants respectfully submit that Lewis (U.S. Patent No. 6,170,318) does not teach a first and a second array of sensors, where the first array generates a response in the presence of a chemical stimulus and the second array generates a response in the presence of a physical stimulus as is included in claim 1.

Considering claims 3, 5 and 8 include all the features of independent claim 1, from which they depend, these claims are patentable to the same extend that independent claim 1 is patentable. Furthermore considering that dependent claim 21 includes all the features of independent claim 19, from which it depends, this claim is patentable to the same extent that independent claim 19 is patentable. As such, Applicants respectfully request that the Examiner withdraws the 35 USC 103(a) rejection of claims 3, 5, 8 and 21.

With regard to claim 9, when applying the Schwartz et al. reference, the Examiner alleges that Schwatrz et al. teach the distributed sensing system in a networked environment in which the wireless communications are implemented using communications technologies selected from the group of infrared technology, satellite technology, microwave technology and radio wave technology. The Examiner relies on the description of col. 16, lines 51-54 of Schwartz for making this allegation of obviousness of claim 9. However, Applicants respectfully point out that col. 16, lines 51-54 of the Schwartz reference state: "... the control system can include ... conventional infrared technology to measure the CO_2." Schwartz et al. do not provide any teachings directed towards wireless communications.

The Schwartz et al. invention is entirely non-analogous with Discenzo, Lewis or the present claimed invention. Schwatrz et al. is directed to methods and bioreactors for expanding a population of cells substantially enriched in hematopoietic

stem cells and substantially free of stromal cells. Discenzo teaches a system for the assessment of the health state of a lubricant, Lewis is directed to an analyte detection system and the present claimed invention is directed to a distributed sensing system in a networked environment for identifying an analyte, the system comprising: a first sensor array connected to the network comprising sensors capable of producing a first response in the presence of a chemical stimulus; a second sensor array connected to the network comprising sensors capable of producing a second response in the presence of a physical stimulus; and means for identifying the analyte.

Accordingly, Applicants respectfully submit that there is no motivation to combine the Schwartz et al. reference with either the Discenzo or a combination of Discenzo and Lewis. Assuming that a motivation did exist, which does not, to combine Schwartz et al. with Discenzo and Lewis, the hypothetical combination would still be deficient in teaching all the features of independent claim 1 for the reasons stated above. Furthermore, this hypothetical combination would also be deficient in teaching the feature of dependent claim 9. As such, Applicants respectfully request that the Examiner withdraws the 35 USC 103(a) rejection of claim 9.

V. NEW CLAIMS

New independent claims 23-25 have been added to better articulate and thus provide a suitable level of protection for the present claimed invention. Entry of new claims 23-25 is respectfully requested. Claims 23-25 read on Group I of the present invention.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 925-472-5000.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims

Claims 1 and 19 have been amended as follows:

1. (Amended) A distributed sensing system in a networked environment for identifying an analyte, said system comprising:

a first sensor array connected to said network comprising sensors capable of producing a first response in the presence of a chemical stimulus;

a second sensor array connected to said network comprising sensors capable of producing a second response in the presence of a physical stimulus; [and]

a computer connected to said network [having an algorithm wherein said first response and said second response are processed to identify said analyte];

a computer readable algorithm for execution by said computer for identifying said analyte, said computer readable algorithm comprising

instructions for comparing said first response and said second response with a known response, and

instructions for identifying said unknown analyte.

19. (Amended) A method for transferring a combination of chemical and physical data over a computer network for identification of an analyte, said method comprising:

transmitting sensory data from a first sensor array comprising sensors capable of producing a first response in the presence of a chemical stimulus to a remote location;

transmitting physical data from a second sensor array comprising sensors capable of producing a second response in the presence of a physical stimulus to a remote location; and

processing said sensory and physical data at said remote location for identification of an analyte, wherein said processing comprises

comparing said first response and said second response with a known response, and

identifying said unknown analyte.

The following claims have been added:

23. A distributed sensing system in a networked environment for identifying an analyte, said system comprising:

a first sensor array connected to said network comprising sensors capable of producing a first response in the presence of a chemical stimulus, wherein said first sensor is connected with said network via a wireless connection;

a second sensor array connected to said network comprising sensors capable of producing a second response in the presence of a physical stimulus;

a computer connected to said network;

computer readable instructions for execution by said computer for identifying said analyte, said computer readable instructions comprising

instructions for comparing said first response and said second response with a known response, and

instructions for identifying said unknown analyte.

24. A distributed sensing system in a networked environment for identifying an analyte, said system comprising:

a first sensor array connected to said network comprising sensors capable of producing a first response in the presence of a chemical stimulus;

a second sensor array connected to said network comprising sensors capable of producing a second response in the presence of a physical stimulus, wherein one of said sensors in said second sensor array is an infrared sensor;

a computer connected to said network;

computer readable instructions for execution by said computer for identifying said analyte, said computer readable instructions comprising

instructions for comparing said first response and said second response with a known response, and

instructions for identifying said unknown analyte.

25. A distributed sensing system in a networked environment for identifying an analyte, said system comprising:

a first sensor array connected to said network comprising sensors capable of producing a first response in the presence of a chemical stimulus, wherein said first sensor is connected with said network via a wireless connection;

a second sensor array connected to said network comprising sensors capable of producing a second response in the presence of a physical stimulus, wherein one of said sensors in said second sensor array is an infrared sensor;

a computer connected to said network;

computer readable instructions for execution by said computer for identifying said analyte, said computer readable instructions comprising

instructions for comparing said first response and said second response with a known response and

instructions for identifying said unknown analyte.

APPENDIX – PENDING CLAIMS

1. A distributed sensing system in a networked environment for identifying an analyte, said system comprising:

a first sensor array connected to said network comprising sensors capable of producing a first response in the presence of a chemical stimulus;

a second sensor array connected to said network comprising sensors capable of producing a second response in the presence of a physical stimulus;

a computer connected to said network;

a computer readable algorithm for execution by said computer for identifying said analyte, said computer readable algorithm comprising

instructions for comparing said first response and said second response with a known response, and

instructions for identifying said unknown analyte.

2. The system according to claim 1, wherein said algorithm selects the most relevant sensor modality in said first and said second array to identify said analyte.

3. The system according to claim 1, wherein each sensor of said first sensor array is a member selected from the group consisting of a bulk conducting polymer film, a semiconducting polymer sensor, a surface acoustic wave device, a fiber optic micromirror, a quartz crystal microbalance, a conducting/nonconducting regions sensor, a dye impregnated polymeric coatings on optical fiber and combinations thereof.

4. The system according to claim 1, wherein each sensor of said second sensor array is a member selected from the group consisting of an optical sensor, a mechanical sensor, a radiation sensor, a thermal sensor and combinations thereof.

5. The system according to claim 3, wherein each sensor of said first sensor array is a conducting/nonconducting regions sensor.

6. The system according to claim 4, wherein each sensor of said second sensor array is an optical sensor, a mechanical sensor, a radiation sensor, a thermal sensor and combinations thereof.

7. The system according to claim 1, wherein the transmission of said first response is conducted via wired communications.

8. The system according to claim 1, wherein the transmission of said first response is conducted via wireless communications.

9. The system according to claim 8, wherein said wireless communications are implemented using communications technologies selected from a member of a group consisting of infrared technology, satellite technology, microwave technology and radio wave technology.

10. The system according to claim 1, wherein said networked environment is a member selected from the group consisting of a worldwide computer network, an internet, the Internet, a wide area network, a local area network, an intranet and combinations thereof.

11. The system according to claim 1, wherein said networked environment is the Internet.

19. A method for transferring a combination of chemical and physical data over a computer network for identification of an analyte, said method comprising:

transmitting sensory data from a first sensor array comprising sensors capable of producing a first response in the presence of a chemical stimulus to a remote location;

transmitting physical data from a second sensor array comprising sensors capable of producing a second response in the presence of a physical stimulus to a remote location; and

processing said sensory and physical data at said remote location for identification of an analyte, wherein said processing comprises

comparing said first response and said second response with a known response, and

identifying said unknown analyte.

20. The method according to claim 19, further comprising employing a sensor selection algorithm to determine sensors in said first array.

21. The method according to claim 19, wherein each sensor of said first sensor array is a member selected from the group consisting of a bulk conducting polymer film, a semiconducting polymer sensor, a surface acoustic wave device, a fiber optic micromirror, a quartz crystal microbalance, a conducting/nonconducting regions sensor, a dye impregnated polymeric coatings on optical fiber and combinations thereof.

22. The method according to claim 19, wherein each sensor of said second sensor array is a member selected from the group consisting of an optical sensor, a mechanical sensor, a radiation sensor, a thermal sensor and combinations thereof.

23. A distributed sensing system in a networked environment for identifying an analyte, said system comprising:

a first sensor array connected to said network comprising sensors capable of producing a first response in the presence of a chemical stimulus, wherein said first sensor is connected with said network via a wireless connection;

a second sensor array connected to said network comprising sensors capable of producing a second response in the presence of a physical stimulus;

a computer connected to said network;

computer readable instructions for execution by said computer for identifying said analyte, said computer readable instructions comprising

instructions for comparing said first response and said second response with a known response, and

instructions for identifying said unknown analyte.

24. A distributed sensing system in a networked environment for identifying an analyte, said system comprising:

a first sensor array connected to said network comprising sensors capable of producing a first response in the presence of a chemical stimulus;

a second sensor array connected to said network comprising sensors capable of producing a second response in the presence of a physical stimulus, wherein one of said sensors in said second sensor array is an infrared sensor;

a computer connected to said network;

computer readable instructions for execution by said computer for identifying said analyte, said computer readable instructions comprising

instructions for comparing said first response and said second response with a known response, and

instructions for identifying said unknown analyte.

25. A distributed sensing system in a networked environment for identifying an analyte, said system comprising:

a first sensor array connected to said network comprising sensors capable of producing a first response in the presence of a chemical stimulus, wherein said first sensor is connected with said network via a wireless connection;

a second sensor array connected to said network comprising sensors capable of producing a second response in the presence of a physical stimulus, wherein one of said sensors in said second sensor array is an infrared sensor;

a computer connected to said network;

computer readable instructions for execution by said computer for identifying said analyte, said computer readable instructions comprising

instructions for comparing said first response and said second response with a known response, and

instructions for identifying said unknown analyte.